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## TO THE KNOWLEDGE OF THE FOSSIL FAMILY PERMOSIALIDAE (INSECTA: MIOMOPTERA)

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The composition of the fossil family Permiosialidae (Miomoptera) is discussed. New synonymies are established: Permiosialidae Martynov, 1928 = Epimastacidae Martynov, 1928, *syn. n.*, = Permonkidae Rasnitsyn, 1977, *syn. n.*, = Perloblattidae Storozhenko, 1992, *syn. n.*, = Tologopteridae Storozhenko, 1992, *syn. n.*; *Permonka* Riek, 1973 = *Perloblatta* Storozhenko, 1992, *syn. n.*; *Permonka triassica* Rasnitsyn, 1977 = *Perloblatta ordinata* Storozhenko, 1992, *syn. n.*. The genus *Sarbalopterodes* Storozhenko, 1991 is transferred from Miomoptera *incertae sedis* to the Permiosialidae.

KEY WORDS. Insects, Palaeozoic, Mesozoic, synonymy.

С. Ю. Стороженко<sup>1)</sup>, В. Г. Новокшонов<sup>2)</sup>. К познанию ископаемого семейства Permiosialidae (Insecta: Miomoptera) // Дальневосточный энтомолог. 1999. N 76. C. 1-5.

Обсуждается состав ископаемого семейства Permiosialidae (Miomoptera). Установлена новая синонимия: Permiosialidae Martynov, 1928 = Epimastacidae Martynov, 1928, *syn. n.*, = Permonkidae Rasnitsyn, 1977, *syn. n.*, = Perloblattidae Storozhenko, 1992, *syn. n.*, = Tologopteridae Storozhenko, 1992, *syn. n.*;

*Permonka* Riek, 1973 = *Perloblatta* Storozhenko, 1992, **syn. n.**; *Permonka triasica* Rasnitsyn, 1977 = *Perloblatta ordinata* Storozhenko, 1992, **syn. n.**. Род *Sarbalopterodes* Storozhenko, 1991 перенесен из Miomoptera *incertae sedis* в семейство Permosialidae.

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## INTRODUCTION

The Paleozoic and Mesozoic order Miomoptera was established by A.V. Martynov (1927). Currently it consists of the four families: Permosialidae Martynov, 1928, Palaeomantiscidae Rasnitsyn, 1977, Palaeomanteidae Handlirsch, 1906 (= Delopteridae Sellards, 1909, = Archisialidae Martynov, 1933) and Archaemipteridae Guthorl, 1939 (Martynova, 1962a; Rasnitsyn, 1980a). New taxonomic data on the family Permosialidae are given below.

### FAMILY PERMOSIALIDAE MARTYNOV, 1928

Permosialidae Martynov, 1928: 93 (Megaloptera); Martynova, 1962b: 269 (Megaloptera); Riek, 1976: 772 (Miomoptera); Rasnitsyn, 1977: 71 (Miomoptera); 1980a: 37 (Miomoptera); Carpenter, 1992: 205 (Neoptera, uncertain order).

Permosialidae (sic!): Rasnitsyn, 1980b: 74 (Palaeomanteida=Miomoptera).

Permembidae: Kukalova, 1963: 40 (part.) (Miomoptera); Riek, 1973: 518 (part.) (Miomoptera).

Epimastacidae Martynov, 1928: 62 (Protoblattoidea), **syn. n.**; Sharov, 1962: 118 (Protoblattoidea).

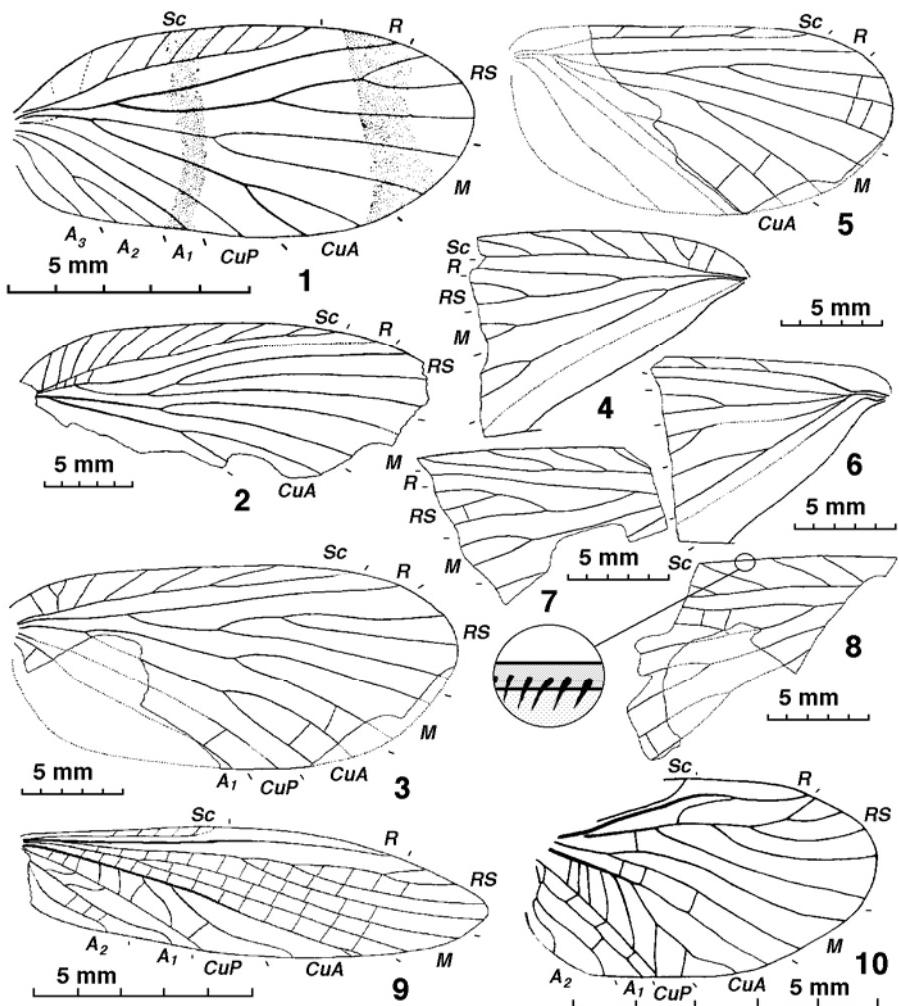
Permonkidae Rasnitsyn, 1977: 72 (Miomoptera), **syn. n.**.

Perloblattidae Storozhenko, 1992a: 75 (Grylloblattida), **syn. n.**; 1997: 9 (Grylloblattida); 1998: 104 (Grylloblattida).

Tologopteridae Storozhenko, 1992b: 126 (Grylloblattida), **syn. n.**; 1997: 13 (Grylloblattida); 1998: 119 (Grylloblattida).

NOTES. The families Permosialidae (order Megaloptera) and Epimastacidae (order Protoblattoidea) was described by A.V. Martynov (1928) from the Permian of Russia. E.F. Riek (1976) transferred Permosialidae from Megaloptera to Miomoptera and placed Lower Permian genera *Permonka* and *Permonikia* to this family. A.P. Rasnitsyn (1977) also considered Permosialidae as Miomoptera and proposed new family Permonkidae for genus *Permonka*. Later he included the genera *Epimastax* and *Permonka* to Permosialidae, but did not mention synonymy of families (Rasnitsyn, 1980a). Therefore the new synonymies are established here: Permosialidae = Epimastacidae **syn. n.** = Permonkidae, **syn.n.**

The family Tologopteridae was described from Upper Permian of Mongolia in the order Grylloblattida (Storozhenko, 1992b). Re-examination of type materials show that interpretation of wing-venation in original description was wrong: *CuA* was considered as *MP*. The wings of *Permosialis* (Fig. 1) and *Tologoptera* (Fig. 2) are similar, therefore Tologopteridae is a junior synonym of Permosialidae.



Figs 1-10. Permosialidae. 1) *Permosialis bifasciata* Matrynov, 1928, fore wing (after Martynova, 1962); 2) *Tologoptera mongolica*, fore wing (after Storozhenko, 1992b); 3-8) *Sarbalopterus frivulus* (Upper Permian, Karaungir): 3-6) spec. N 2781/241: 3, 4) fore wing, 4, 5) hind wing, 7) spec. N 2781/240, fore wing, 8) spec. N 2781/239, fore wing; 9, 10) *Permonika triassica*: 9) hind wing (after Storozhenko, 1992a), 10) hind wing (after Rasnitsyn, 1977).

Genus *Sarbalopterodes* was described from Upper Permian of Kazakhstan (Karaungir) in the grylloblattid family Liomopteridae (Storozhenko, 1991), but later was placed in Miomoptera incertae sedis (Storozhenko, 1997). After the study of additional materials from the same locality (Figs. 3-8) it is clear that *Sarbalopterodes* belongs to the family Permosialidae. *Sarbalopterodes* is closely related to *Permosialis* and *Tologoptera*, but well distinguished from them by membranous wings and by presence of the row of hairs on C in both wings.

The family Perloblattidae was established for single species from Middle or Upper Triassic of Kyrgyzstan (Storozhenko, 1992a). Genus *Perloblatta* is synonymized here with *Permonka*, therefore Perloblattidae is a junior synonym of Permosialidae.

GENERAL INCLUDED. Seven genera from Lower Permian to Middle Jurassic of Europe, Asia, Australia and South Africa: *Permosialis* Martynov, 1928, *Epimastax* Martynov, 1928 (= *Sindomioptera* Rasnitsyn, 1977), *Permonka* Riek, 1973 (= *Perloblatta* Storozhenko, 1992), *Permonia* Kukalova, 1963, *Permonikia* Kukalova, 1963, *Sarbalopterodes* Storozhenko, 1991 and *Tologoptera* Storozhenko, 1992.

### **Genus *Permonka* Riek, 1973**

*Permonka* Riek, 1973: 520 (type species - *Permonka bifida* Riek, 1973, by original designation); Riek, 1976: 772; Rasnitsyn, 1977: 72; 1980b: 74.

*Perloblatta* Storozhenko, 1992a: 75 (type species - *Perloblatta ordinata* Storozhenko, 1992, by original designation), **syn. n.**; Storozhenko, 1998: 104.

SPECIES INCLUDED. Five species from Upper Permian of South Africa, Triassic and Jurassic of Central Asia.

#### ***Permonka triassica* Rasnitsyn, 1977**

*Permonka triassica* Rasnitsyn, 1977: 73, fig. 8 (holotype - N 2240/2274, Kyrgyzstan, Madygen; Middle or Upper Triassic, Madygenian Stage; in Paleontological Institute, Moscow).

*Perloblatta ordinata* Storozhenko, 1992a: 75, fig. 5v (holotype - N 2555/723a; Kyrgyzstan, Madygen; Middle or Upper Triassic, Madygenian Stage; in Paleontological Institute, Moscow), **syn. n.**; Storozhenko, 1998: 104, fig. 164.

NOTES. The re-examination of holotype of *Perloblatta ordinata* (Fig. 9) shows that it is only a hind wing of *Permonka triassica* (Fig. 10). The differences in shape of wings depend on postsedimentational deformation of rock.

### **Genus *Permosialis* Martynov, 1928**

*Permosialis* Martynov, 1928: 94 (type species - *Permosialis paucinervis* Martynov, 1928, by subsequent designation [Matryanova, 1961: 470]).

NOTES. The species of *Permosialis* divided into two groups: the first one with small wings, less numerous veinlets of *Sc*, long branch of *RS* with short fork of *RS<sub>1+2</sub>*; the second one with larger wings, more numerous veinlets of *Sc*, relatively short *RS* with long fork of *RS<sub>1+2</sub>*. Both groups are found in the same localities (for example, in Upper Permian Sojana of Arkhangelsk Region and in Kaltan of Kemerov Region). Probably these groups may be considered as separate genera, and in this case the species with larger wings will transfer to the genus *Tologoptera*. In other hand in the Lower Permian locality Chekarda we found well preserved bodies of the undescribed *Permosialis* with distinct sexual dimorphism: length of males wings 7.5-8.5 mm, females 13-14 mm; the *Sc* veinlets of males are less numerous. If sexual dimorphism is usual for both Lower and Upper Permian *Permosialis*, than genus *Tologoptera* must be synonymized with *Permosialis*. In any case this problem may be discuss only after revision of *Permosialis*.

SPECIES INCLUDED. 17 species from Permian of East Europe, West Siberia and South Africa (Martynova, 1962b; Riek, 1968).

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